

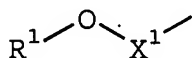
**AMENDMENTS TO THE CLAIMS**

**This listing of claims will replace all prior versions and listings of claims in the application:**

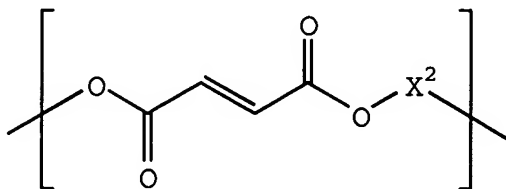
**LISTING OF CLAIMS:**

Claim 1. (currently amended): A fumarate derivative having at least one group represented by formula (1) as the terminal groups and having two to ten groups represented by formula (2) as a repeating unit within the same molecule:

Formula (1)

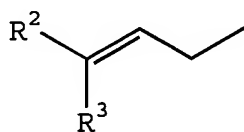


Formula (2)



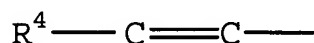
(wherein in formula (1), each R<sup>1</sup> independently represents formula (3) or (4), and in formula (1) or (2), X<sup>1</sup> and X<sup>2</sup> each independently represents an organic residue derived from a polyhydric alcohol having from 2 to 6 hydroxyl groups and 2 to 30 carbon atoms, provided that X<sup>1</sup> and X<sup>2</sup> may be ester-bonded to have a branched structure having a group represented by formula (1) as the terminal groups and having a group represented by formula (2) as a repeating unit);

Formula (3)



(wherein R<sup>2</sup> and R<sup>3</sup> each independently represents hydrogen atom or an alkyl group having from 1 to 5 carbon atoms);

Formula (4)

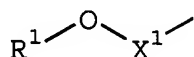


(wherein R<sup>4</sup> represents hydrogen atom or an alkyl group having from 1 to 11 carbon atoms);

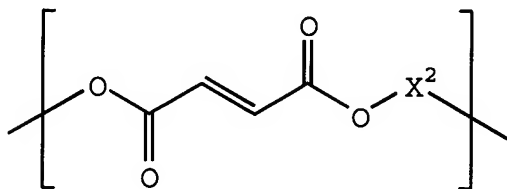
wherein the molar ratio of the terminal group represented by formula (1) to the repeating unit represented by formula (2) is from 0.2 to 2.

Claim 2. (currently amended): A fumarate derivative having at least one group represented by formula (1) as the terminal groups and having two to ten groups represented by formula (2) and two to five groups represented by formula (5) as a repeating unit within the same molecule:

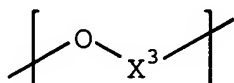
Formula (1)



Formula (2)

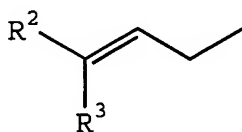


Formula (5)



(wherein in formula (1), each R<sup>1</sup> independently represents formula (3) or (4), and in formulae (1), (2) and (5), X<sup>1</sup>, X<sup>2</sup> and X<sup>3</sup> each independently represents an organic residue derived from a polyhydric alcohol having from 2 to 6 hydroxyl groups and having from 2 to 30 carbon atoms, provided that X<sup>1</sup>, X<sup>2</sup> and X<sup>3</sup> may be ester-bonded and/or ether-bonded to have a branched structure having a group represented by formula (1) as the terminal groups and having a group represented by formula (2) and formula (5) as a repeating unit);

Formula (3)



(wherein R<sup>2</sup> and R<sup>3</sup> each independently represents hydrogen atom or an alkyl group having from 1 to 5 carbon atoms);

Formula (4)



(wherein R<sup>4</sup> represents hydrogen atom or an alkyl group having from 1 to 11 carbon atoms);

wherein the molar ratio of the terminal group represented by formula (1) to the repeating unit represented by formula (2) is from 0.2 to 2.

Claims 3-4. (canceled).

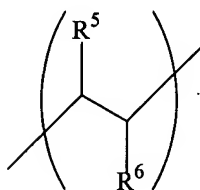
Claim 5. (previously presented): The fumarate derivative as claimed in any one of claims 1 to 2, wherein 80% or more of  $R^1$  in formula (1) is formula (4).

Claim 6. (previously presented): The fumarate derivative as claimed in any one of claims 1 to 2, wherein  $R^4$  in formula (4) is any one selected from the group consisting of hydrogen atom, a methyl group, an ethyl group, an n-propyl group and an isopropyl group.

Claim 7. (withdrawn): The fumarate derivative as claimed in any one of claims 1 to 2, wherein  $X^1$ ,  $X^2$  and  $X^3$  in formulae (1), (2) and (5) each independently is an organic residue derived from at least one alcohol selected from the group consisting of an alkylene diol, an alicyclic diol and an aromatic diol.

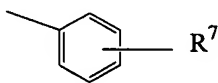
Claim 8. (withdrawn): The fumarate derivative as claimed in any one of claims 1 to 2, wherein the organic residue as claimed in claim 7 is represented by formula (6):

Formula (6)



(wherein  $R^5$  and  $R^6$  each independently represents hydrogen atom or formula (7));

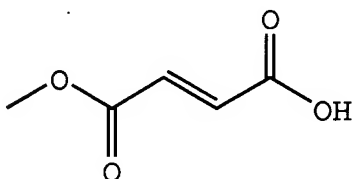
Formula (7)



(wherein  $R^7$  represents hydrogen atom or an alkyl group having from 1 to 3 carbon atoms).

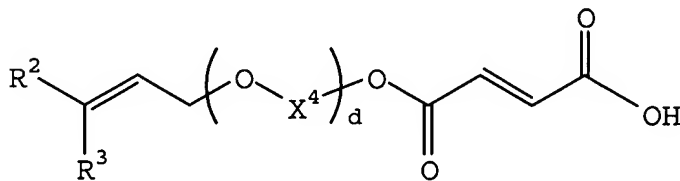
Claim 9. (withdrawn): The fumarate derivative as claimed in any one of claims 1 to 2, wherein at least one terminal group is a group represented by formula (8):

Formula (8)



Claim 10. (withdrawn): The fumarate derivative, which is represented by formula (9):

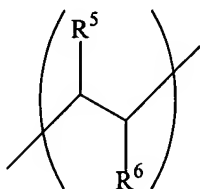
Formula (9)



(wherein each  $X^4$ , which is present in the number of  $d$  in formula (9), independently represents an alkylene group or a cycloalkylene group having from 5 to 12 carbon atoms,  $d$  represents an integer of 1 to 5, and  $R^2$  and  $R^3$  each independently represents hydrogen atom or an alkyl group having from 1 to 5 carbon atoms).

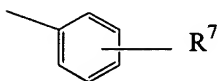
Claim 11. (withdrawn): The fumarate derivative as claimed in claim 10, wherein  $X^4$  in formula (9) is an alkylene group represented in formula (6):

Formula (6)



(wherein  $R^5$  and  $R^6$  each independently represents hydrogen atom or formula (7));

Formula (7)

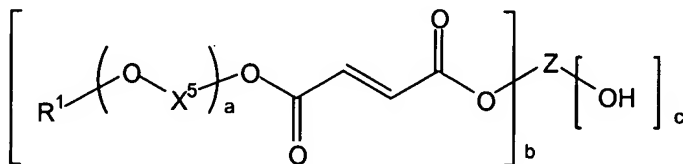


(wherein  $R^7$  represents hydrogen atom or an alkyl group having from 1 to 3 carbon atoms).

Claim 12. (withdrawn): The fumarate derivative as claimed in any one of claims 1 to 2, wherein at least one terminal group is a hydroxyl group.

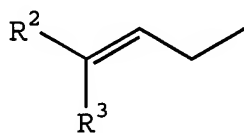
Claim 13. (original): The fumarate derivative, which is represented by formula (10):

Formula (10)



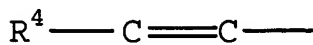
(wherein Z represents an organic residue derived from a tri-, tetra-, penta- or hexahydric alcohol,  $R^1$  independently represents formula (3) or formula (4), each  $X^5$ , which is present in the number of a in formula (10), independently represents an alkylene group or a cycloalkylene group having from 5 to 12 carbon atoms, a represents an integer of 1 to 5, b represents an integer of 1 to 6, c represents an integer of 0 to 5, and  $b+c$  is from 3 to 6);

Formula (3)



(wherein  $R^2$  and  $R^3$  each independently represents hydrogen atom or an alkyl group having from 1 to 5 carbon atoms);

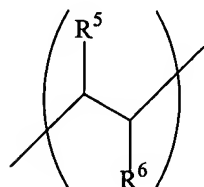
Formula (4)



(wherein  $R^4$  represents hydrogen atom or an alkyl group having from 1 to 11 carbon atoms).

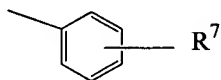
Claim 14. (previously presented): The fumarate derivative as claimed in claim 13, wherein  $X^5$  in formula (10) is an alkylene group represented in formula (6):

Formula (6)



(wherein  $R^5$  and  $R^6$  each independently represents hydrogen atom or formula (7));

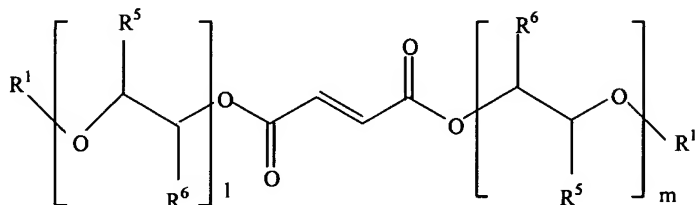
Formula (7)



(wherein  $R^7$  represents hydrogen atom or an alkyl group having from 1 to 3 carbon atoms).

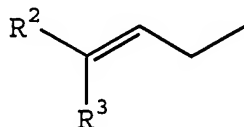
Claim 15. (withdrawn): The fumarate derivative, which is represented by formula (11):

Formula (11)



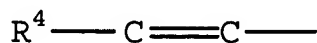
(wherein,  $R^1$  independently represents formula (3) or formula (4), and  $l$  and  $m$  each independently represents an integer of 1 to 5);

Formula (3)



(wherein  $R^2$  and  $R^3$  each independently represents hydrogen atom or an alkyl group having from 1 to 5 carbon atoms);

Formula (4)

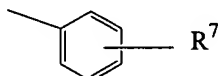




(wherein  $R^4$  represents hydrogen atom or an alkyl group having from 1 to 11 carbon atoms);

(wherein  $R^5$  and  $R^6$  each independently represents hydrogen atom or formula (7));

Formula (7)



(wherein  $R^7$  represents hydrogen atom or an alkyl group having from 1 to 3 carbon atoms).

Claim 16. (withdrawn): A method for producing a fumarate derivative as claimed in any one of claims 1 to 9 and claim 12, comprising reacting a fumarate derivative having at least one formula (8) in the terminal groups and having two or more groups represented by formula (2) as a repeating unit with a polyhydric alcohol having from 2 to 6 hydroxyl groups and having from 2 to 30 carbon atoms in the presence of a catalyst.

Claim 17. (withdrawn): A method for producing a fumarate derivative as claimed in claim 13 or 14, comprising reacting a fumarate derivative having at least one group represented by formula (8) in the terminal groups with a polyhydric alcohol having from 2 to 6 hydroxyl groups and having from 2 to 30 carbon atoms in the presence of a catalyst.

Claim 18. (withdrawn): A method for producing a fumarate derivative as claimed in any one of claims 1 to 9 and claim 12, comprising reacting a fumarate derivative having at least one group represented by formula (8) in the terminal groups and having two or more

groups represented by formula (2) as a repeating unit with a polyhydric alcohol having from 2 to 6 hydroxyl groups and having from 2 to 30 carbon atoms in the presence of a condensing agent and a base.

Claim 19. (withdrawn): A method for producing a fumarate derivative as claimed in claim 13 or 14, comprising reacting a fumarate derivative having at least one group represented by formula (8) in the terminal groups with a polyhydric alcohol having from 2 to 6 hydroxyl groups and having from 2 to 30 carbon atoms in the presence of a condensing agent and a base.

Claim 20. (withdrawn): A method for producing a fumarate derivative as claimed in claims 18 and 19, wherein the condensing agent is sulfonyl chloride.

Claim 21. (withdrawn): The method for producing a fumarate derivative as claimed in any one of claims 16 to 20, wherein the polyhydric alcohol having from 2 to 6 hydroxyl groups and having from 2 to 30 carbon atoms is at least one selected from the group consisting of trimethylolpropane, trimethylolethane, pentaerythritol, ditrimethylolpropane, dipentaerythritol and adducts thereof with an ethylene oxide or a propylene oxide.

Claim 22. (withdrawn): A method for producing a fumarate derivative having formula (4) in the terminal groups, comprising isomerizing terminal groups of a fumarate

derivative having formula (3) as the terminal groups in the presence of a catalyst to convert said terminal groups into formula (4).

Claim 23. (withdrawn): The method for producing a fumarate derivative having formula (4) in the terminal groups as claimed in claim 22, wherein the fumarate derivative having formula (3) as the terminal groups is the fumarate derivative described in any one of claims 1 to 15.

Claim 24. (withdrawn): The method for producing a fumarate derivative having formula (4) in the terminal groups as claimed in claim 22 or 23, wherein 80% or more of the fumarate derivative having formula (3) as the terminal groups is converted into formula (4) by the isomerization reaction.

Claim 25. (withdrawn): The method for producing a fumarate derivative having formula (4) in the terminal groups as claimed in claim 22 or 23, wherein the catalyst used for the isomerization reaction is a catalyst containing at least one of palladium, rhodium and ruthenium.

Claim 26. (previously presented): A polymerizable composition comprising the fumarate derivative as claimed in any one of claims 1 to 2.

Claim 27. (withdrawn): The polymerizable composition as claimed in claim 26, which comprises:

from 1 to 99% by mass of the fumarate derivative described in any one of claims 1 to 15, and

from 1 to 99% by mass of at least one compound selected from the group consisting of an unsaturated polyester, an oligomer having (meth)acrylate group and a radical polymerizable monomer.

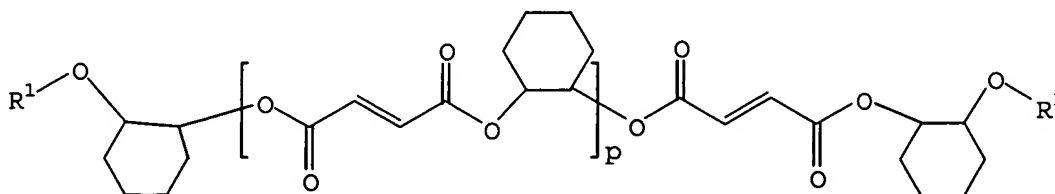
Claim 28. (previously presented): A polymerizable composition comprising:

100 parts by mass of the polymerizable composition described in claim 26, and from 0.01 to 15 parts by mass of a radical polymerization initiator.

Claim 29. (previously presented): A cured product obtained by curing the polymerizable composition as claimed in claim 26.

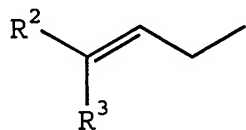
Claim 30. (withdrawn): The fumarate derivative, which is represented by formula (25):

Formula (25)



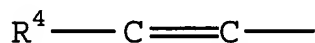
(wherein, R<sup>1</sup> independently represents formula (3) or formula (4), and p represents an integer of 1 to 9);

Formula (3)



(wherein R<sup>2</sup> and R<sup>3</sup> each independently represents hydrogen atom or an alkyl group having from 1 to 5 carbon atoms);

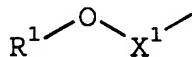
Formula (4)



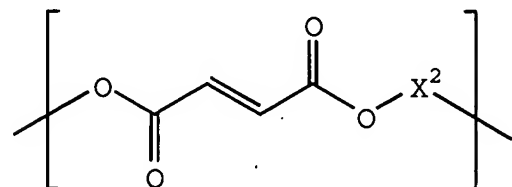
(wherein R<sup>4</sup> represents hydrogen atom or an alkyl group having from 1 to 11 carbon atoms).

Claim 31. (new): A fumarate derivative having at least one group represented by formula (1) as the terminal groups and having two to ten groups represented by formula (2) as a repeating unit within the same molecule:

Formula (1)



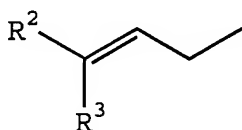
Formula (2)



(wherein in formula (1), each R<sup>1</sup> independently represents formula (3) or (4), and in formula (1) or (2), X<sup>1</sup> and X<sup>2</sup> each independently represents an organic residue derived from a

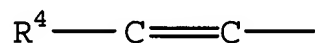
polyhydric alcohol having from 2 to 6 hydroxyl groups and 2 to 30 carbon atoms, provided that  $X^1$  and  $X^2$  within the same molecule is an organic residue derived from a polyhydric alcohol having from 3 to 6 hydroxyl groups and 2 to 30 carbon atoms, and provided that  $X^1$  and  $X^2$  may be ester-bonded to have a branched structure having a group represented by formula (1) as the terminal groups and having a group represented by formula (2) as a repeating unit);

Formula (3)



(wherein  $R^2$  and  $R^3$  each independently represents hydrogen atom or an alkyl group having from 1 to 5 carbon atoms);

Formula (4)

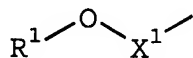


(wherein  $R^4$  represents hydrogen atom or an alkyl group having from 1 to 11 carbon atoms);

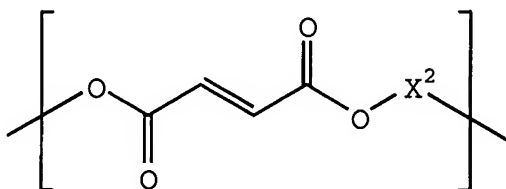
wherein 80% or more of  $R^1$  in formula (1) is  $\text{CH}_3\text{-CH=CH-}$ .

Claim 32. (new): A fumarate derivative having at least one group represented by formula (1) as the terminal groups and having two to ten groups represented by formula (2) as a repeating unit within the same molecule:

Formula (1)



Formula (2)

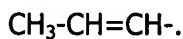


(wherein in formula (1), each R<sup>1</sup> independently represents formula (3) or (4), and in formula (1) or (2), X<sup>1</sup> and X<sup>2</sup> each independently represents an organic residue derived from a polyhydric alcohol having from 2 to 6 hydroxyl groups and 2 to 30 carbon atoms, provided that X<sup>1</sup> and X<sup>2</sup> within the same molecule is an organic residue derived from a polyhydric alcohol having from 3 to 6 hydroxyl groups and 2 to 30 carbon atoms, and provided that X<sup>1</sup> and X<sup>2</sup> may be ester-bonded to have a branched structure having a group represented by formula (1) as the terminal groups and having a group represented by formula (2) as a repeating unit);

Formula (3)



Formula (4)



Claim 33. (new): A polymerizable composition comprising the fumarate derivative as claimed in claim 13 or 14.